




June 4, 2003

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FROM: Don Nelson
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SUBJECT: Project Delivery Memo #03-01 - Bituminous Pavement Marker Adhesive

Purpose and Direction

Background: In the past few years, there has been a high failure rate on the installation of raised pavement markings.

The HQ Traffic Office led an effort to find a product that would perform better than products meeting the existing specifications for "Hot Melt Traffic Button Adhesive" with minimal increase in cost. Research of the problem with industry, the State Materials Lab, and trials in the Olympic and Northwest regions resulted in new performance-related specifications for the bituminous adhesive material. Changes to Sections 8-09.3(3) and 9-02.1(8) are attached. Material meeting the new specifications for "Flexible Bituminous Pavement Marker Adhesive" has been found to provide superior results in pavement marker installations.

Types of Projects Affected: Projects involving paving or surface treatments, or safety projects involving replacement of "Raised Pavement Markers."

Direction: Based on the high rate of failure seen in raised pavement marker installations using material meeting the current specifications, it is important to implement the new material specifications and construction requirements as soon as possible. The new specifications will be added to upcoming contracts by amendment to the *Standard Specifications*. The Qualified Products List (QPL) will be revised to eliminate products that meet the current specifications. Manufacturers will need to submit material that meets the new specifications listed on the revised QPL.

Value in Making the Change: The maintenance of raised pavement markers is important to provide guidance for the motoring public, particularly for nighttime driving situations. Replacement of raised pavement markers is a difficult, expensive, and hazardous operation. The new adhesive specifications will optimize the life cycle of the raised pavement markers, providing better guidance for drivers and reducing maintenance costs.

Action Requested

Project Development

Projects currently under development will require minimal change, if any. An amendment to the *Standard Specifications* will be incorporated into the contracts as they are being put together. Projects that go on ad after June 2, 2003, will have the new amendment incorporated.

Contract Ad and Award

For projects currently being advertised for bids, the new amendment should be added by addendum, if it is possible to do so without impacting the date of bid opening.

Construction

Projects that are under contract should incorporate these specification modifications by change order if raised pavement marker work is yet to be accomplished. We expect that there will be an increase of approximately \$0.05 per raised pavement marker using the adhesive that meets the new requirements. There may be restocking charges for material that meets the current specifications, depending on the timing of this change. If the contractor has elected to use epoxy adhesive for raised pavement markers, no change is needed. This memo constitutes HQ Construction approval of these specification changes. The Regions may execute these change orders.

DN:cd
KJD/HJP/JRS
Attachments

cc: John Conrad
Region Construction Engineers
Region Construction Trainers
Region Materials Engineers
Region Project Development Engineers
Region Traffic Engineers

Tom Baker
Kevin Dayton
Ed Lagergren
Harold Peterfeso
Toby Rickman
Ken Walker

SECTION 8-09, RAISED PAVEMENT MARKERS

8-09.3(3) Adhesive Preparation

This section is revised to read:

Epoxy adhesive shall be maintained at a temperature of 60° F to 85° F before use and during application.

Component A shall be added to Component B just before use and mixed to a smooth uniform blend. The unused mixed adhesive shall be discarded when polymerization has caused stiffening and reduction of workability.

Bituminous pavement marker adhesive shall be indirectly heated in an applicator with continuous agitation or recurring circulation. Bituminous adhesive shall be applied at temperatures recommended by the manufacturer. Adhesive temperature shall not exceed the maximum safe heating temperature stated by the manufacturer. The Contractor shall provide the Engineer with manufacturer's written instructions for application temperature and maximum safe heating temperature.

SECTION 9-02, BITUMINOUS MATERIALS

9-02.1(8) Hot Melt Traffic Button Adhesive

This section including title is revised to read:

9-02.1(8) Flexible Bituminous Pavement Marker Adhesive

Flexible bituminous pavement marker adhesive is a hot melt thermoplastic bituminous material used for bonding raised pavement markers and recessed pavement markers to the pavement.

The adhesive material shall conform to the following requirements:

Property	Test Method	Requirement
Penetration, 77 F, 100g, 5 sec, dmm	AASHTO T 49	30 Max.
Softening Point, F	AASHTO T 53	200 Min.
Rotational Thermoset Viscosity, cP, #27 spindle, 20 RPM, 400 F	AASHTO T 316	5000 Max.
Ductility, 77 F, 5 cm/minute, cm	AASHTO T 51	15 Min.
Ductility, 39.2 F, 1 cm/minute, cm	AASHTO T 51	5 Min.
Flexibility, 1", 20 F, 90 deg. Bend, 10 sec., 1/8" x 1" x 6" specimen	ASTM D 3111 <i>Note 1</i>	Pass

Flexible bituminous adhesive shall develop bond pull-off strength greater than 50 psi when tested in accordance with WSDOT T- 426.

Note 1. Flexibility test is modified by bending specimen through an arc of 90 degrees at a uniform rate in 10 seconds over a 1-inch diameter mandrel.